

**MORTGAGE-RELATED SECURITIES****Mortgage-Backed Securities**

High default rates on mortgage bonds during the Great Depression inhibited demand for these instruments until the introduction of the Government National Mortgage Association (GNMA) pass-through security in 1970. Even with the federal government guarantee there was considerable skepticism about the acceptance of mortgage securities in the investment community when GNMA first issued its securities.

The mortgage-backed securities (MBSs) introduced by GNMA in 1970, consisted only of Federal Housing Administration (FHA) and Veteran's Administration (VA) mortgages. Conventional lenders had indirect access to the capital markets only through the Federal Home Loan Mortgage Corporation (Freddie Mac) beginning in 1971. Originators could sell mortgages to Freddie Mac, which pooled and sold the resulting securities as Participation Certificates (PCs).

In 1981, Freddie Mac began a swap program, Guarantor I, that allowed lenders to exchange conventional mortgages for pass-through securities. In the first Freddie Mac swap of mortgages for securities, no cash exchanged hands. The seller received payment as PCs representing ownership in the mortgages sold. In this exchange or swap of assets, the savings association believed it could sell its low-rate mortgages more easily and at a higher price in security form rather than mortgage form. Soon after, the Federal National Mortgage Association introduced its Mortgage-Backed Security program. This restructuring of savings association mortgage portfolios was the major factor in the rapid growth of conventional mortgage securities.

As the mortgage securities market grew, lenders began to recognize that the swap programs provided an attractive alternative method for mortgage sales. In addition, many lenders began to securitize their portfolio mortgages to add both value and liquidity. Most issuers now issue the securities through the swap programs. Fannie Mae, Freddie Mac, and GNMA all collect a small guarantee fee throughout the life of the mortgages for the service.

The term mortgage security describes a variety of mortgage-related financial instruments. Although characteristics can vary widely, there are only two basic types of mortgage securities:

- A certificate representing ownership of an undivided interest in a proportionate share of each mortgage in a pool, referred to as a mortgage pass-through security or a mortgage-backed security (MBS).
- A debt obligation secured by a specified pool of mortgages, referred to as a mortgage derivative product (MDP).

Within each type, the market designed variations to appeal to certain investor classes or to reduce the cost of security financing.

Some mortgage derivative products (MDPs) exhibit considerably more price volatility than mortgages or ordinary mortgage pass-through securities and can expose investors to significant risk of loss if not managed in a safe and sound manner. Uncertain cash flows that result from changes in the prepayment rates of the underlying mortgages cause this price volatility.

Because these products are complex, savings associations need a high degree of technical expertise to understand how their prices and cash flows may behave in various interest-rate and prepayment environments. An institution's management should understand the risks and cash flow characteristics of its investments. This is particularly important for products that have unusual, leveraged, or highly variable cash flows. Moreover, because the secondary market for some of these products is relatively thin, they may be difficult to liquidate

should the need arise. Finally, there is additional uncertainty because the market continues to introduce new variants of these instruments. Savings associations are not able to test their price performance under varying market and economic conditions because the products are too new.

Savings associations should ensure that levels of activity involving MDPs are reasonable and appropriately relate to a savings association's capital, capacity to absorb losses, and level of in-house management sophistication and expertise. OTS considers investments in complex securities and the use of financial derivatives by institutions that do not have adequate risk measurement, monitoring, and control systems to be an unsafe and unsound practice. Appropriate managerial and financial controls must be in place and the savings association must analyze, monitor, and prudently adjust its holdings of MDPs in an environment of changing price and maturity expectations.

### *Secondary Mortgage Market*

Through this market, original lenders are able to sell loans in their portfolios to build liquidity to support additional lending. Mortgage agencies, such as Freddie Mac, Fannie Mae, and investment bankers buy mortgage loans. In turn, these agencies and investment bankers create pools of mortgages that they repackage as mortgage-backed securities, which they sell to investors. Mortgage-backed securities or mortgage pass-through certificates provide investors with payments of interest and principal on the underlying mortgages. Since the underlying issuer guarantees the mortgage pass-through certificate, the default risk is low for this type of security.

The buying, selling, and trading of existing mortgage loans and mortgage-backed securities constitutes the secondary mortgage market. This has become a significant activity for many savings associations.

The payments for MBSs resemble mortgage payments but without delinquencies. Principal and interest payments, less guarantee and servicing fees, pass through to the investor whether or not the issuer collects them. The servicer advances the delinquencies to the investor until the mortgage either becomes current or foreclosure is complete. Prepayments pass through to the investor as received.

The servicer collects mortgage payments on a monthly basis from the mortgagor and remits those funds less its servicing fee to a central collection point, or directly to the investors for GNMA I. Fannie Mae, Freddie Mac, and GNMA II collect their guarantee fee either directly from the payments that they pass through or from the servicer.

Fannie Mae and GNMA have always guaranteed the timely payment of both principal and interest to investors for their MBSs, requiring the servicer to advance its own funds to the investor to make up for delinquencies. Freddie Mac only guaranteed the timely payment of principal until they developed their Gold PC and now it, too, guarantees the timely payment of both principal and interest. The following characteristics determine the structure of an MBS:

- Types of mortgages in the pool.
- Weighted-average coupon on the pool of underlying mortgages.
- Pass-through rate on the MBS.
- Weighted-average remaining maturities of the mortgages.
- Number and size of the mortgages.
- Geographic distribution of mortgages.

Weighted-Average Coupon and Pass-Through Rate

The weighted-average coupon (WAC) of the mortgage pool is an important factor in determining prepayment speeds. In general, higher WACs relative to current mortgage rates result in faster prepayments because homeowners have an incentive to refinance at lower market rates. Lower WACs relative to current mortgage rates lead to slower prepayments because lower refinancing rates are not readily available.

The average interest rate on the underlying mortgages of an MBS usually exceeds the pass-through rate. The spread between the WAC and the pass-through rate represents guarantee fees and servicing fees. A savings association that originates and packages loans for securitization can set limits on the permissible range of interest rates in a pool. These limits must be within the guidelines established by the guarantor of the MBS for each specific program.

Original Term and Weighted-Average Remaining Maturity

The original term and the weighted-average remaining maturity (WARM) also affect the rate of repayment. Longer terms to maturity mean that amortization of principal will spread out over a longer period. This means the security passes through less principal during the early years of the security. In addition, prepayment patterns vary by original terms such as 30 years or 15 years. Loan age, which represents the difference between original and remaining maturity, also affects the rate of repayment. Payments on older mortgages allocate more to principal than to interest. Prepayments on a mortgage pool also tend to increase as the mortgages age, or become more seasoned. Eventually, prepayments slow down, or burn out. This occurs when most of the mortgagors remaining in the pool are either unwilling or unable to prepay. The maturity date of an MBS is generally the date on which the last mortgage in the pool repays in full. Each guarantor of an MBS sets limits on the permissible range of interest rates and maturities for each specific program.

Geographic Distribution

The location of the mortgages comprising the pool affects the likelihood and predictability of prepayments. Different areas of the country prepay at much different rates. Geographical diversity permits greater predictability of cash flows as the mortgage pool is less subject to regional economic conditions and other local influences. More mortgages in a given pool tend to diversify risks and make cash flows more regular and predictable.

*Types of Mortgage-Backed Securities*Agency-Issued MBS

Agency-issued MBSs are attractive to certain investors because of their minimal credit risk, ease of trading, and liquidity. The low credit risk of MBSs results from the guarantees that Fannie Mae, Freddie Mac, or GNMA places on its mortgage securities.

Non-Agency MBSs

Other issuers, including mortgage bankers, insurance companies, investment banks, and other financial institutions that issue MBSs, also create and issue securities from a pool of loans. Non-agency MBSs include both pass-through and pay-through structures.

These securities typically have more credit risk and less liquidity than agency MBSs but still often carry AA or AAA ratings due to various credit enhancements. These credit enhancements include primary mortgage insurance and reserve funds. Some issuers split the security into a senior/subordinated structure. The sen-

ior/subordinated structure splits the security into low-credit risk (senior) and high-credit risk (subordinated) pieces or tranches. The subordinated tranche(s) absorb the first wave of losses. Only after exhausting the subordinate class(es) does the senior tranche(s) incur losses. The credit risk of the subordinated tranches depends on the credit risk of the underlying mortgages and the deal structure. Therefore, the credit risk depends on the amount of loss exposure assigned to the tranche. Investors should monitor the credit ratings on MBSs and CMOs issued by private conduits.

Non-agency MBSs often include nonconforming mortgages that are too large or otherwise ineligible for securitization by the agencies. Non-agency MBSs also tend to be more geographically concentrated than Fannie Maes, Freddie Macs, and GNMA.

#### Fixed-Rate MBSs

Fannie Mae, Freddie Mac, and GNMA issue fixed-rate MBSs with terms of 30 years, 20 years, and 15 years. They also issue pools of balloon mortgages that follow a 30-year amortization schedule but mature after five or seven years. Graduated Payment Mortgages (GPMs) and Tiered Payment Mortgages (TPMs) pay a pre-established but increasing rate over time.

#### Adjustable-Rate MBSs

The issuance of MBSs backed by adjustable-rate mortgages (ARMs) provides an additional type of pass-through security in the secondary market. An adjustable-rate MBS offers protection against rising rates by linking its interest rate to a market-based index, like the one-year Constant Maturity Treasury (CMT) rate or the Eleventh District Cost of Funds. Periodic and lifetime caps along with teaser rates limit that protection by constraining the extent of rate adjustment. A teaser ARM features a low introductory interest rate designed to induce borrowers to select ARMs over fixed-rate mortgages.

ARMs often have periodic caps, lifetime caps, or both. A typical periodic cap on a one-year ARM limits the increase or decrease in the coupon to two percent per year. While an annual cap limits the amount of rate adjustment during any given year, the lifetime cap establishes a maximum coupon on the ARM throughout the life of the mortgage. Some ARMs without periodic caps still have payment caps that limit the increase in monthly payments rather than the interest rate. Negative amortization can occur, that is, the principal balance increases, if the mortgage reaches its payment cap.

You should determine the effect of teaser rates, periodic caps, and lifetime caps on the savings association's ARM MBS portfolio. The interaction between teaser rates and periodic caps is particularly important. Consider an ARM with a teaser rate of five percent, a fully indexed rate of eight percent, and an annual cap of two percent. This ARM offers the investor no protection against rising rates for at least two years. The rate at the start of the second year will be the same (seven percent) if rates fall one percent or rise four percent. The ARM only reaches its fully indexed rate in the third year if the index rate increases by 100 basis points or more. A teaser rate affects the lifetime cap as well. With a five percent teaser rate, the lifetime cap will typically be 11 percent, or only 300 basis points above the current, fully indexed rate.

### **Mortgage-Backed Security Considerations**

#### *MBS Yields and Prices*

Present value analysis discounts the future cash flows of mortgages by their required rate of return, which equals the rate available in the market for investments of similar risk. This process calculates an MBS's present value or estimated market value. Alternately, given a market price, it is possible to determine the rate of

return or yield that would make the sum of the discounted cash flows equal to the market price. Two common measures of yield are the cash flow yield and the option-adjusted yield.

### Cash Flow Yield

To determine the cash flow, or static yield of an MBS, discount the sum of all future cash flows back to the current market price. The cash flow yield calculation requires two major inputs: the current price of the security and a projection of future cash flows. Issuers usually base prepayment estimates upon Wall Street forecasts for similar MBSs and incorporate those prepayment estimates into the analysis.

The cash flow yield assumes cash flows will follow projections. Actual prepayments may exceed or fall short of projections, depending largely on the future course of interest rates. Falling market interest rates encourage homeowners to prepay their mortgages and refinance them at the new, lower rate. Rising interest rates encourage homeowners to retain mortgages, which would then have below-market rates. The cash flow yield does not take the variability of future interest rates and, therefore, prepayments into account. While cash flow yield may be an adequate measure (particularly for MBSs at or near par), it is less accurate than the option-adjusted yield measure described below.

### Option-Adjusted Yield

The option-adjusted yield method can provide a more accurate comparison of the yield on investments with embedded options, like the prepayment option on a mortgage, to investments without embedded options such as noncallable corporate bonds. The option-adjusted yield does not rely on a single projected cash flow using a single prepayment estimate. The option-adjusted yield derives from many projected cash flows and prepayment estimates. The option-adjusted yield equals the discount rate (internal rate of return) that makes the average present value of the cash flows equal to the market price of the security. As shown in the example below, option-adjusted yields are typically lower than nominal yields. The difference between nominal and option-adjusted yields is greatest when prepayments are most interest-rate sensitive.

#### **Example: Nominal Yield Vs. Option-Adjusted Yield**

Compare an MBS with a seven percent coupon and a five-year base case weighted average life to a five-year noncallable corporate bond also with a seven percent coupon and of similar credit risk and liquidity. Both are priced at par. Consider three possible interest-rate scenarios: rates rise 100 basis points (25 percent probability), rates fall 100 basis points (25 percent probability), and rates stay the same. The weighted average life of the MBS increases to seven years if rates go up 100 basis points and decreases to three years if rates fall 100 basis points. The discount rate (internal rate of return) needs to equal 6.84 percent for the average present value of the cash flows to equal the current market price.

| Rate Scenario         | Probability | Present Value | Discount Rate |
|-----------------------|-------------|---------------|---------------|
| Flat                  | .50         | 100.668       | 6.84%         |
| Up 100 basis points   | .25         | 95.54         | 7.84%         |
| Down 100 basis points | .25         | 103.15        | 5.84%         |
| Weighted Average      | 1.00        | 100.00        | 6.84%         |

Although the bond and MBS provide the same nominal yield (seven percent), the bond outperforms the MBS by an average of 16 basis points once the investor considers interest rate and cash flow volatility. The option-adjusted yield is usually superior to cash flow yield as a measure of the yield of financial instruments

with embedded prepayment options. This is because the option-adjusted yield considers the estimated probability distribution of potential prepayment rates instead of using a single estimate.

#### *MBS Accounting*

The interest method is the required accounting measurement for recording the yield for MBSs. Savings associations should amortize or accrete into income premiums and discounts using the interest method over the expected life of the mortgage security. This should result in a constant rate of interest (level-yield) when applied to the amount outstanding at the beginning of any given period.

Account for differences between anticipated and actual prepayments by recalculating the effective yield to reflect actual payments to date and anticipated future payments. This adjusts the net investment in the MBS to the amount that would have existed had the new effective yield been applied since acquisition.

For adjustable-rate MBSs, savings associations may base the effective yield on either the rate in effect at acquisition or recalculate the effective yield each time the rate on the MBSs change. Solicit comparable market quotes from at least two brokers other than the broker that executes the transactions. Even if a savings association does not have significant volume, they should obtain comparable price quotes.

#### *Mortgage-Backed Bonds*

A mortgage-backed bond is unlike a mortgage-backed pass-through security because they do not convey ownership of any portion of the underlying pool mortgages. However, mortgage-backed bonds do offer a more predictable maturity and thus offer a form of call protection. The bond issuer retains nearly all the risk associated with the security, including the interest rate risk and the credit risk. A pay-through bond has less risk exposure for the issuer than a straight bond, but greater risk than a pass-through security.

#### *Mortgage Derivative Products*

OTS defines a financial derivative in § 563.172. A financial derivative is a financial contract whose value depends on the value of one or more underlying assets, indices, or reference rates. The most common types of financial derivatives are futures, forward commitments, options, and swaps. OTS does not consider certain mortgage derivative securities such as collateralized mortgage obligations (CMOs) or real estate mortgage investment conduits (REMICs) as financial derivatives.

#### Collateralized Mortgage Obligations

Freddie Mac first issued collateralized mortgage obligations (CMOs) in 1983. Freddie Mac designed CMOs in the early 1980s to broaden investor demand. They do this by splitting an underlying pool of mortgages and MBSs into different classes, or tranches, that appeal to different types of investors. For example, Freddie Mac splits a pool of 30-year, fixed-rate MBSs into short-term, intermediate-term, and long-term tranches. Listed below are various types of CMO tranches found in savings association portfolios.

A major initial drawback to widespread use of the CMO was the substantial size of the mortgage pool; \$100 million or more was necessary to support the cost of issuance. The appearance of CMO conduits, however, made CMO issues feasible for smaller lenders. The conduit achieves the economies of scale needed to make the issue cost-effective for the lender by pooling collateral supplied by a number of lenders. Only a few of the conduits survived and, as a result, Fannie Mae, Freddie Mac, GNMA, and investment bankers that have access to large volumes of collateral dominate the list of issuers.

CMOs demand higher yields than other investments of similar quality and maturity because the actual life of the bond is uncertain. Some CMOs, like PACs, offer more predictability of prepayments than mortgages or other types of mortgage-backed bonds because of the large collateral pools backing each type of issue and the prioritization of cash flows.

The market's assumptions regarding the average life and average life volatility of each investor class determine CMO yields and yield spreads over comparable treasuries. Short-term agency PACs, which have little average life volatility, often trade at spreads of less than 50 basis points over Treasury. More volatile tranches earn significantly wider spreads. As with mortgage investments, the actual prepayment of the mortgages will determine the actual yield to maturity.

Prepayments on a CMO tranche are a function of prepayments on the underlying mortgages and the tranche structure. Faster or slower prepayments on the underlying mortgages can affect the weighted average life of an individual CMO tranche, but not necessarily proportionately. As noted above, PACs usually have much more stable cash flows than the underlying mortgages, but support tranches have much more volatile cash flows.

Geographic concentrations, loan size, and market interest rates affect prepayments on non-agency MBSs. If the MBS consists of mortgages concentrated in a particular state, prepayments on the MBS may differ substantially from national prepayment patterns. Prepayments on the large loans that characterize many non-agency MBSs tend to accelerate more quickly when market interest rates fall.

#### *CMO Risks*

The tranche structure of CMOs allocates rather than eliminates the risk of the underlying mortgages. The creation of tranches with shorter average lives than the underlying mortgages requires the creation of tranches with longer average lives. Stable PAC tranches require volatile support tranches. Investment-grade senior classes create speculative-grade subordinated tranches. The yield and market value of subordinate interests in CMOs are extremely sensitive to prepayment fluctuations. These kinds of riskier tranches can still attract investors in one of two ways. They may appeal to investors with different risk profiles; for example, long-term CMOs can match the long-term liability structure of insurance companies. Issuers may also attract investors by offering higher yields.

CMO structures can also present risks that are less obvious. These risks include PAC drift, cap risk, basis risk, and illiquidity.

- **PAC Drift**

The industry designed PACs to provide a predictable stream of cash flows across a range of prepayments, known as a PAC band. Many investors incorrectly assume that PAC bands remain fixed. In fact, faster-than-predicted prepayments can cause the band to narrow or drift. The support tranches will shrink or prepay entirely. The planned amortization rate guarantee disappears without a support tranche available to cushion future prepayment volatility. Investors often refer to these securities as busted PACs.

The amount of protection afforded by the PAC depends on the following factors:

- \* Width of the PAC band – wider bands provide more protection.
- \* Relative sizes of the PACs and supports in the deal – more supports provide greater insulation against prepayment volatility.

- \* Prepayment volatility of the underlying mortgages.

The consequences of a PAC's drifting or "busting" depend on the security type. For a traditional PAC, the CMO merely assumes the prepayment characteristics of the underlying mortgages. Narrowing or eliminating the PAC band causes Type II PACs to assume the prepayment characteristics of a support tranche and can be much more volatile than the underlying mortgages.

- **Cap Risk**

Lifetime caps limit the extent to which floating-rate CMOs can adjust to rising market interest rates. One can consider a lifetime cap an embedded option and, as the value of the option increases, the price of the security falls. As with any option, the effect of a lifetime cap on price and price volatility depends on the following factors:

- \* The option's intrinsic value, that is, the distance between the cap and the current rate on the CMO.
- \* The volatility of the index.
- \* The time to expiration (the average life of the CMO).

Many issuers use floaters as support tranches. With floaters, an increase in market interest rates causes a reduction in the distance to the lifetime cap and an extension (sometimes dramatic) of the average life of the CMO. Savings associations must fully incorporate the effect of lifetime caps on price sensitivity when self-reporting the price sensitivity of floating-rate CMOs on Schedule CMR.

- **Basis Risk**

Mismatched floaters can expose institutions to considerable basis risk if the index rate on the floater diverges significantly from short-term market interest rates, such as LIBOR. Such a divergence can arise from a nonparallel shift in the yield curve (if the index is the Ten-Year CMT) or from a lag between current market rates and the index rate (if the index is COFI). Basis risk is most significant for mismatched floaters with long or volatile average lives. Savings associations should evaluate the potential effect of nonparallel yield curve shifts on mismatched floaters.

- **Liquidity Risk**

Volatile or exotic CMO tranches tend to be the least liquid. Illiquidity places both purchasers and sellers at a disadvantage. The lack of an available market makes the asset difficult to sell without considerable price concessions. Illiquidity also makes it difficult to determine the true market value for a security and increases the possibility that the savings association will overpay. Illiquidity imposes transaction costs on buyers and sellers of securities. The broker receives the difference between the amount paid by the buyer and received by the seller, known as the bid-ask spread. A wide bid-ask spread means the buyer pays more and the seller receives less.

### *Types of CMOS*

- **Sequential Pay**



Issuers often structure CMO deals as a series of Sequential Pay bonds. Each investor class generally receives monthly interest payments on the outstanding principal balance of its class. The bond allocates principal payments to each investor class in the order of maturity. The shortest outstanding maturity receives all principal payments until that class is fully retired, then holders of the second class begin to receive principal payments, and so forth. Most CMO issues have a compound interest or accrual class (called the Z Bond) that receives no interest or principal payments until the retirement of all other investor classes. The accrual bond's coupon rate compounds during the accrual phase and converts to an interest-paying instrument following retirement of all shorter maturity classes.

- **Planned Amortization Class**

A CMO innovation that was very popular in the late 1980s is the Planned Amortization Class (PAC). The PAC structure reduces cash flow uncertainty by guaranteeing a specific cash flow stream, provided that prepayments on the underlying mortgages remain within an established range or band. The increased certainty of PAC tranches causes other tranches in the issue (known as companion or support tranches) to have more uncertain cash flows. A Type II PAC represents a hybrid between a PAC and a support tranche. Type II PACs offer predictable cash flows, but within a narrower range of prepayments. If prepayments fall outside that range, Type II PACs assume the cash flow volatility of a support tranche.

- **Floating-Rate CMOs**

The market developed floating-rate tranches to attract investors more concerned with interest rate risk. Floaters typically adjust monthly or quarterly based on some index, such as LIBOR. Rate adjustments are usually subject to a lifetime cap, but periodic caps are unusual.

- **Mismatched Floaters**

A further innovation involves mismatched floating-rate CMOs that may adjust monthly or quarterly. Their rate adjustment ties either to a longer-term index, such as the Ten-Year Constant Maturity Treasury (CMT), or to a lagging index, such as COFI. These CMOs offer higher yields than traditional floaters but present basis risk from lack of perfect correlation between the index rate and short-term market interest rates.

- **Kitchen Sink Bonds**

Typically, a homogeneous pool of MBSs creates a diverse group of CMO tranches. A kitchen sink bond (also called a re-REMIC or a Matched Principal Bond) reverses the process by creating a single CMO from a dissimilar group of mortgage securities. Risky individual securities make up kitchen sink bonds. The resulting bond may not necessarily be volatile due to offsetting risks (that is, combining IOs and POs) but is usually difficult to analyze due to its complex composition.

### Real Estate Mortgage Investment Conduits

Congress passed Real Estate Mortgage Investment Conduit (REMIC) legislation in 1987. This legislation provided a new vehicle for issuing MBSs. Issuers structure REMICs much like CMOs and other securitized receivables but REMICs offer certain tax advantages. The government does not generally tax the special purpose entity formed to issue the pass-through or pay-through certificate at the entity level. Also, the savings association does not typically consolidate the special purpose entities. This allows for increased securitizations in REMIC form and leveraging of savings association capital because the assets are off-balance sheet. Nearly all CMOs are REMICs, as are most non-agency MBSs, including those with a pass-through structure.

### Futures, Forwards, and Options

In the futures market, investors buy and sell contracts for the future delivery of a commodity or security. The forward market is a market in which participants trade some commodity, security, or instrument at a fixed price at a future date. The proper use of derivatives such as futures, forwards, swaps, and options can reduce an institution's exposure to interest rate risk and can provide a framework for hedging strategies. Improper use of these securities can generate extreme losses. See the discussion of swaps in this section under Mortgage Derivative Products. See also Sections 650, Interest Rate Risk Management; and 660, Derivative Instruments and Hedging.

### Stripped Mortgage-Backed Securities

In 1986, Fannie Mae issued the first stripped mortgage-backed securities (SMBSs). This instrument created two new classes of investors or security holders. Each class received a percentage of the principal and interest payments from either the MBS or from the whole mortgages that served as the underlying collateral. For example, one class of the SMBS may receive 99 percent of the interest payments and one percent of the principal payments from the underlying MBS. Investors in different classes of SMBSs buy a derivative mortgage instrument that has significantly different characteristics from the underlying mortgages or the MBSs. The industry also refers to these classes as tranches.

In 1987, Fannie Mae introduced an SMBS composed of an interest only (IO) class and a principal only (PO) class. The holder of the IO receives all the interest payments from the underlying MBS while the holder of the PO receives all the principal payments.

Investment bankers also create their own version of SMBSs both through private placements and public offerings. Investment bankers normally create the private placement through a participation agreement that entitles the holder to a certain predefined percentage of the principal and interest payments from the underlying mortgages or the MBS. These private placements are similar to the original Fannie Mae SMBSs in that holders receive varying percentages of the principal and interest payments rather than a percentage of all the interest or principal. In addition, Freddie Mac issues its own version of IOs and POs using participation certificates rather than MBSs.

### Fallen Angels

Examiners refer to securities not performing as expected due to changes in either tranche structure or market conditions as fallen angels. Savings associations may continue to account for fallen angels as held-to-maturity. You should consider unrealized losses on these securities in your evaluation of the institution's capital adequacy.

### Mortgage Swaps

Mortgage swaps are off-balance sheet transactions designed to replicate the purchase of MBSs with reverse repurchase agreements or some other short-term or floating-rate source of funding. In essence, the transaction combines a forward commitment to purchase MBSs with an amortizing interest-rate swap. Unlike the traditional purchase of mortgage securities, however, the issue makes no cash payment at the outset of the agreement.

Mortgage swaps are an alternative to a straight purchase of MBSs. They involve a great deal of leverage because the initial collateral on the transaction is a small fraction (typically four points) of the par value of the mortgage securities and the transaction is off-balance sheet. They also may enable the investor to effectively

finance mortgage securities at a rate tied to a floating-rate index below LIBOR on a guaranteed multiyear basis.

### Collateralized Loan Obligations

Collateralized loan obligations (CLOs) are securities primarily collateralized by commercial loans of varying quality. Some issues may also be collateralized in part by high-yield corporate debt securities.

CLOs are generally sold in several progressively risky tranches. The first tranche often has a high investment rating, such as AAA, due to its payment priority and the initial overcollateralization of the security. The collateral also sequentially supports the next tranche(s). CLOs typically have a revolving period and an amortization period. During the revolving period, principal payments are reinvested in other assets in accordance with the terms of the agreement. During the amortization period, any principal payments are used to first repay the Class A note holders in full, then any remaining principal is used to pay junior tranche investors in order of their priority.

The middle tranches are often rated at the lower investment grade ratings, such as BBB. The lowest priority tranche, or the residual interest tranche, is generally not rated. It is typically subordinated not only to senior tranches, but also to expenses of the issuing trust. These residual tranches are typically difficult to value and are illiquid investments by themselves. To make the residual tranche more marketable, the CLO issuer or trustee may swap the residual interest tranche for certificates guaranteed by a AAA-rated counterparty as to the principal amount at maturity (generally up to 12 years).

While the swap creates a guarantee of the full principal at maturity, the amount guaranteed must be discounted to its present value if terminated early. In that respect, the guaranteed portion of the security is similar to a zero-coupon Treasury bond. Therefore, the credit support provided by the guarantor may cover less than 50 percent of the face value of the certificate at purchase. Unlike zero-coupon bonds, however, these certificates are generally sold at par. Investors must rely on the performance of the reference asset (the residual tranche in this case) to return the remaining portion of their investment and provide any yield. The performance of the reference asset is not, however, guaranteed. Therefore, these investments are not, and should not be considered, fully rated.

Apparently, the motivation to purchase such certificates is the high yield projected if the CLO collateral pool (and thereby the reference asset) performs well. However, there is no guarantee of residual cash flows, and the certificates will not default if no cash flows are paid to the investors. These investments are speculative, and are clearly not intended to hedge interest rate risk or credit risk. Based on discussions with rating agencies, and the lack of supporting cash flow analysis, it is difficult to assess the likelihood that a particular return could be achieved on these investments. In essence, an institution should not be misled by split ratings where only a part of the security is either guaranteed or rated investment grade.

It is imperative that institutions properly underwrite investment securities for quality, applicable regulatory and policy compliance, and suitability to operational and strategic plans.